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Exserticlava aquatica sp. nov., a microfungus from the Brazilian Amazon

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Abstract—A new species, *Exserticlava aquatica,* collected on submerged decaying twigs in Pará State in the Brazilian Amazon, is described and illustrated. The microfungus is characterized by monoblastic conidiogenesis with repeated percurrent conidiophore extensions and conidiogenous cells with a slightly swollen apex that does not protrude beyond the ruptured outer wall.

Key words—*Ascomycota, Chaetosphaeriaceae,* conidial fungi, freshwater fungi, taxonomy

Introduction

Exserticlava S. Hughes is characterized by distoseptate conidia and a hyaline apical swelling of the conidiogenous cell formed by the inner wall disrupting a pigmented outer wall (Hughes 1978). Tsui & al. (2001) reviewed the morphology of the genus and provided a key to five species; subsequently two more species were described: *E. yunnanensis* and *E. manglietiae* (Cai & Hyde 2007, Ren & al. 2012). *Exserticlava* is associated with the perithecial genus *Chaetosphaeria* Tul. & C. Tul. (Réblová & Seifert 2003, Seifert & al. 2011: 204). During a survey of microfungi associated with twigs in estuary areas, an interesting specimen was collected and is described here as a new *Exserticlava* species.

Material & methods

Samples of submerged decaying twigs were washed in river water to remove sand and placed in plastic bags. In the laboratory, the samples were processed according Castañeda-Ruiz & al. (2016) and regularly examined for 40 days under stereomicroscope for observation of the reproductive structures. Slide mounts were prepared in PVL (polyvinyl alcohol, lactic acid, and phenol) and/or in lactic acid. Microphotographs were obtained using a Olympus BX51 microscope with Nomarski interference optics. The type specimen has been deposited in the Herbarium of Universidade Estadual de Feira de Santana, Brazil (HUEFS).

Taxonomy

Exserticlava aquatica L.T. Carmo, C.R. Silva, Careli, S.M. Leão, Feletti & Gusmão, **sp. nov.** Plate 1

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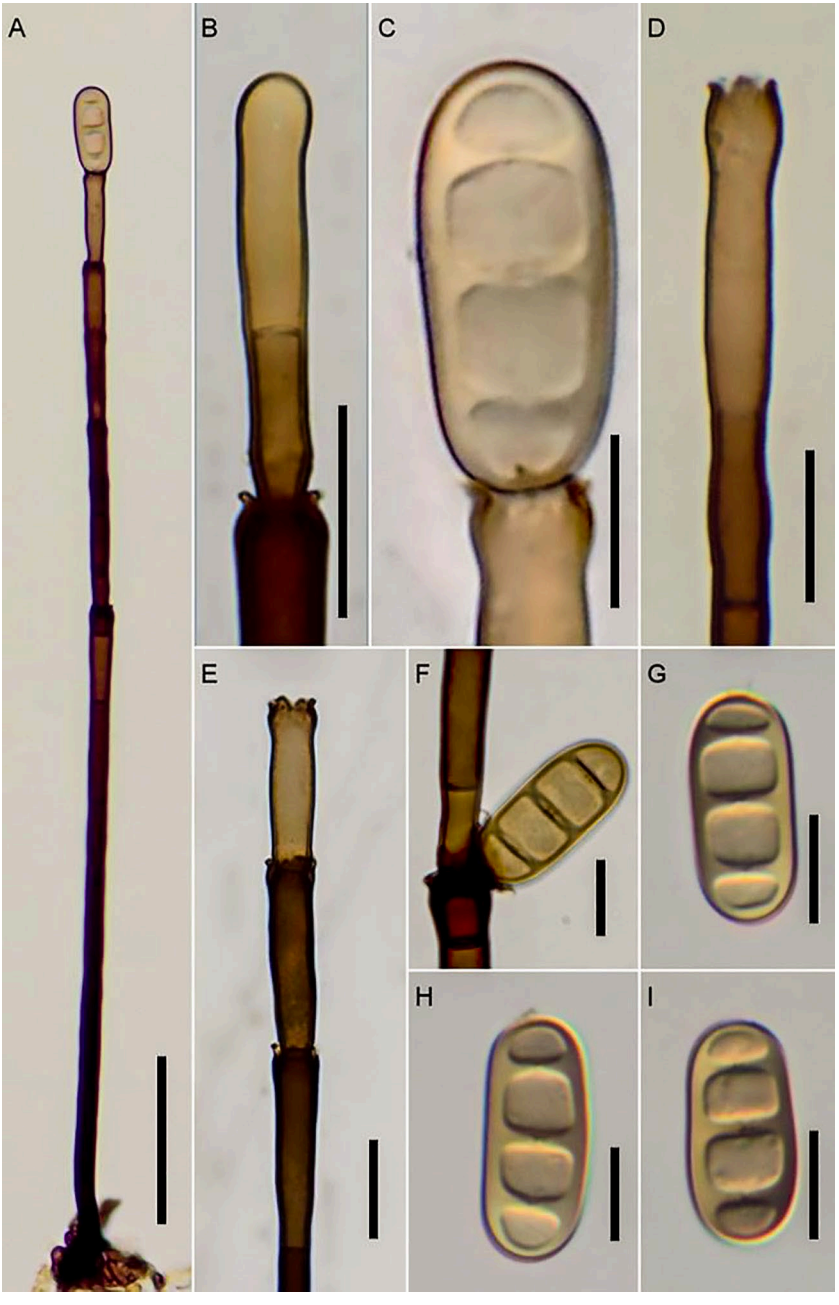
Differs from *Exserticlava triseptata* by its monoblastic conidiogenesis, its conidiogenous cells with a slightly swollen apex that does not protrude beyond the ruptured outer wall, and its smaller oblong-obtuse conidia.

Type: Brazil, Pará State: Belém, Mosqueiro island, 1°03′45″S 48°20′14″W, on submerged decaying twigs of unidentified plant, 2.VI.2018, coll. L.T. Carmo (**Holotype,** HUEFS249946).

Etymology: the specific epithet refers to the aquatic habitat from which the species was collected.

Colonies effuse, brown. Mycelium superficial and immersed, composed of septate, branched, smooth, pale brown hyphae. Conidiophores macronematous, mononematous, unbranched, erect, straight or slightly flexuous, smooth, thick-walled, dark brown to paler toward the apex, slightly swollen at the base, surrounded by pseudo-parenchymatous cells forming a brown stroma 22.5–27 µm wide, (6–)8–13–septate, 330–455 × 6.5–7.5 µm. Conidiogenous cells monoblastic, enteroblastic, percurrent and progressive leading to the production of up to 7 conidiogenous cell extensions, integrated, terminal, clavate, slightly swollen at the apex, without conspicuous expansion of the inner wall and not protruding from the fragmented and pigmented outer wall of conidiogenous cells, smooth, pale brown, 18.5–46.5 × 5–7.5 µm. Conidial secession schizolytic. Conidia acrogenous, holoblastic, solitary, smooth, oblong-obtuse, thick-walled, 3-distoseptate, sometimes with conspicuous

Plate 1. *Exserticlava aquatica* (holotype, HUEFS 249946): A. General aspect of conidiophore with attached conidium; B. Conidiogenous cell development; C. Conidium attached to conidiogenous cell; D. Conidiogenous cell; E. Proliferating conidiogenous cells; F. Conidiogenous cell producing a conidium after extension; G–I. Conidia. Scale bars: A = 50 µm; B–I = 10µm.


A
B
C
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G
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I

aperture on distosepta, pale brown, 21–26.5 × 10–11.5 µm; conidia sometimes produced within intercalary old conidiogenous cells. Sexual morph: not observed.

Note: *Exserticlava triseptata*, *E. keniensis*, and *E. vasiformis* most closely resemble *E. aquatica* by producing 3-distoseptate conidia; the four other accepted species are 1-distoseptate (Tsui & al. 2001, Rao & de Hoog 1986). However, *E. triseptata* and *E. keniensis* have brown elliptic-obovoid conidia and the conidiogenous cells extend forming a hyaline swelling that produces conidia; and *E. vasiformis* is distinguished by vigorous inner wall extension of funnel-shaped conidiogenous loci (Hughes 1978, Matsushima 1975, Tsui & al. 2001). *Exserticlava aquatica* is easily separated from the other *Exserticlava* species by its pale brown conidia, its several percurrent conidiogenous cell extensions, and the distinctive crown-like appearance of the outer wall of the conidiogenous cell; the new species is further characterized by monoblastic conidiogenous cells and an absence of conspicuous inner wall expansion to fragment the pigmented outer conidiogenous cell wall.

Exserticlava triseptata and *E. vasiformis* have been widely recorded in Brazil, including in the Amazon region (Cruz & al. 2008).

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